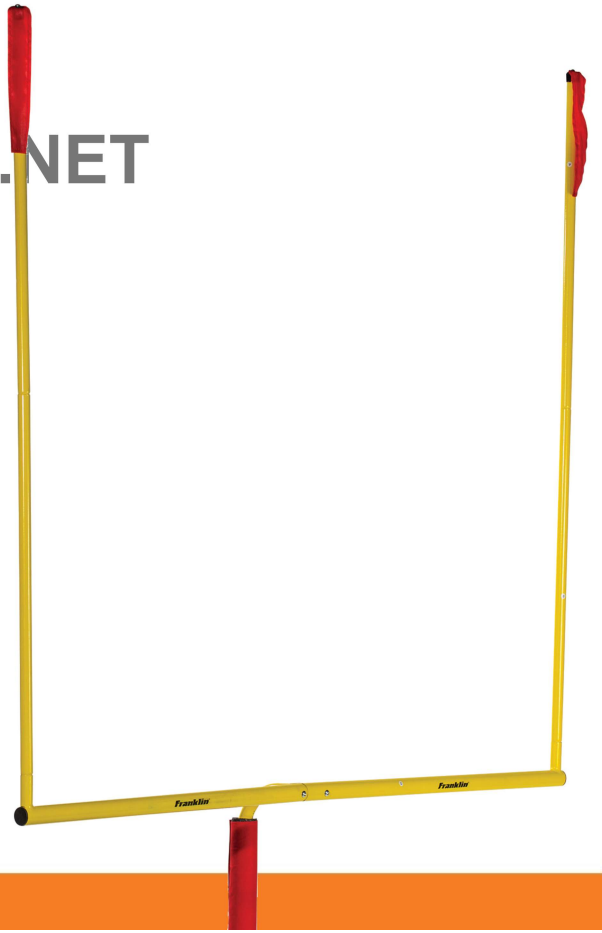
Core Basics

Develop Intelligence

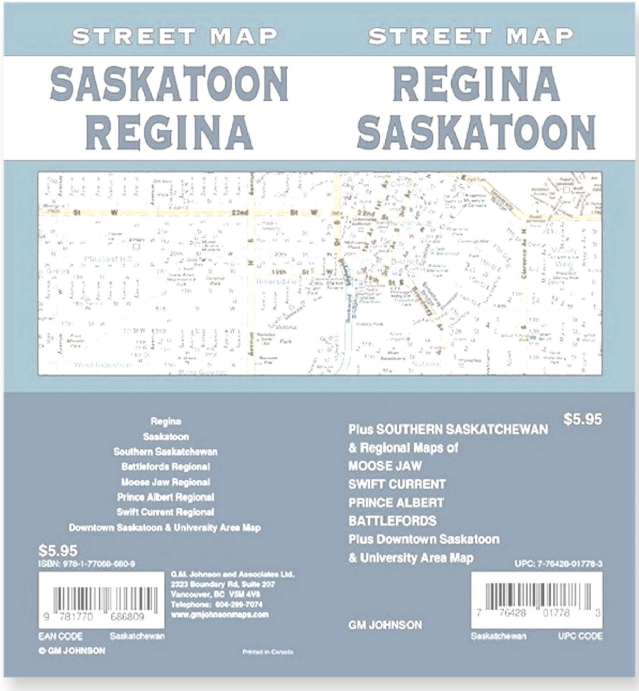
Goals

- Name an advantage of .NET (Core)
- Distinguish between **.NET**, **.NET Core**, and **.NET Framework**



Roadmap

1. Overview
2. Introducing .NET Core
3. Tooling



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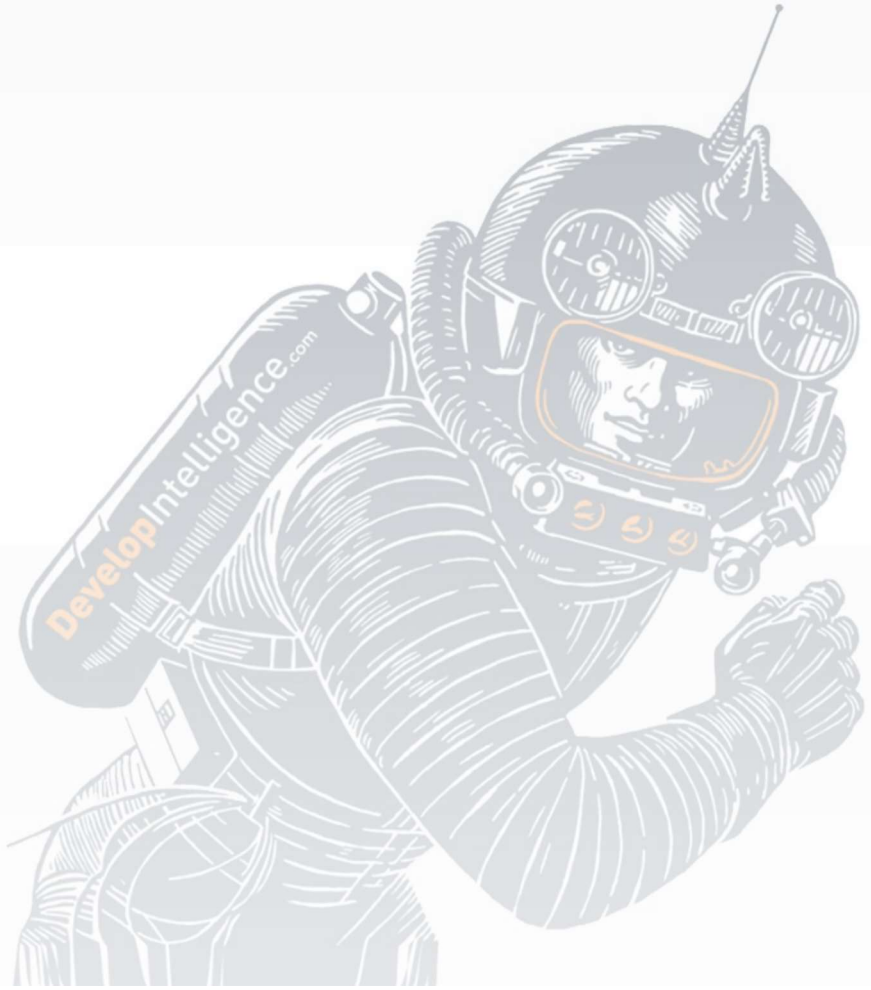

Overview

.NET Classic: The Good Parts

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- Multi-platform *(Sort of)*
- Managed code
- Automatic Memory Management
- Relatively performant
- Great tooling
- One-stop shop

.NET Core Revolution

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- Complete re-write of .NET
- Open source
- *Actually* cross-platform
- Low memory footprint

Compatibility

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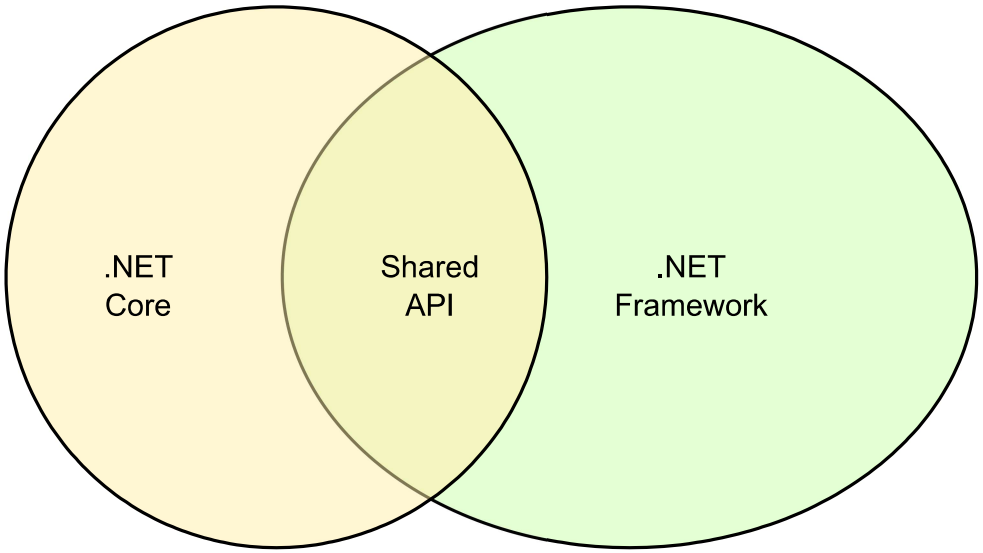
- Similar to classic .NET
- But not 100% backward compatible
- New problem: Choosing a target platform and a version

Solution: .NET Standard

- Defines a set of APIs supported by Core and Classic
- New ***New*** problem: One more possible target

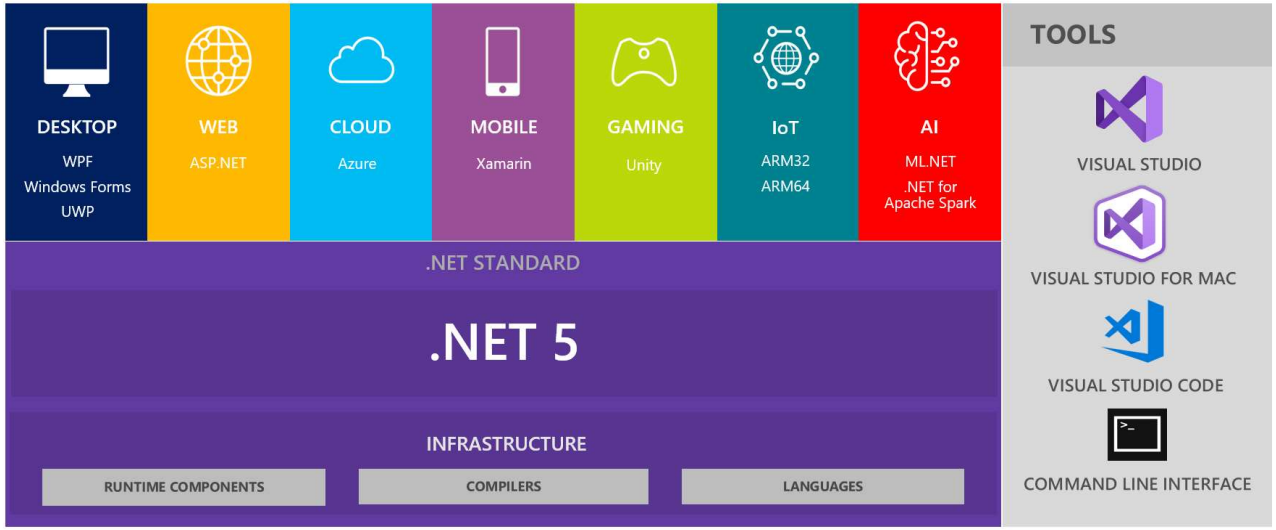


Good News Everyone!

Develop Intelligence

- There will again be a unified .NET
- .NET 5 released November 2020
- New terminology
  - **Core** is now mostly implied
  - **.NET** is the current and future technology, building on the Core legacy
  - **.NET Framework** is the legacy Windows-centric technology

.NET- A Unified Platform



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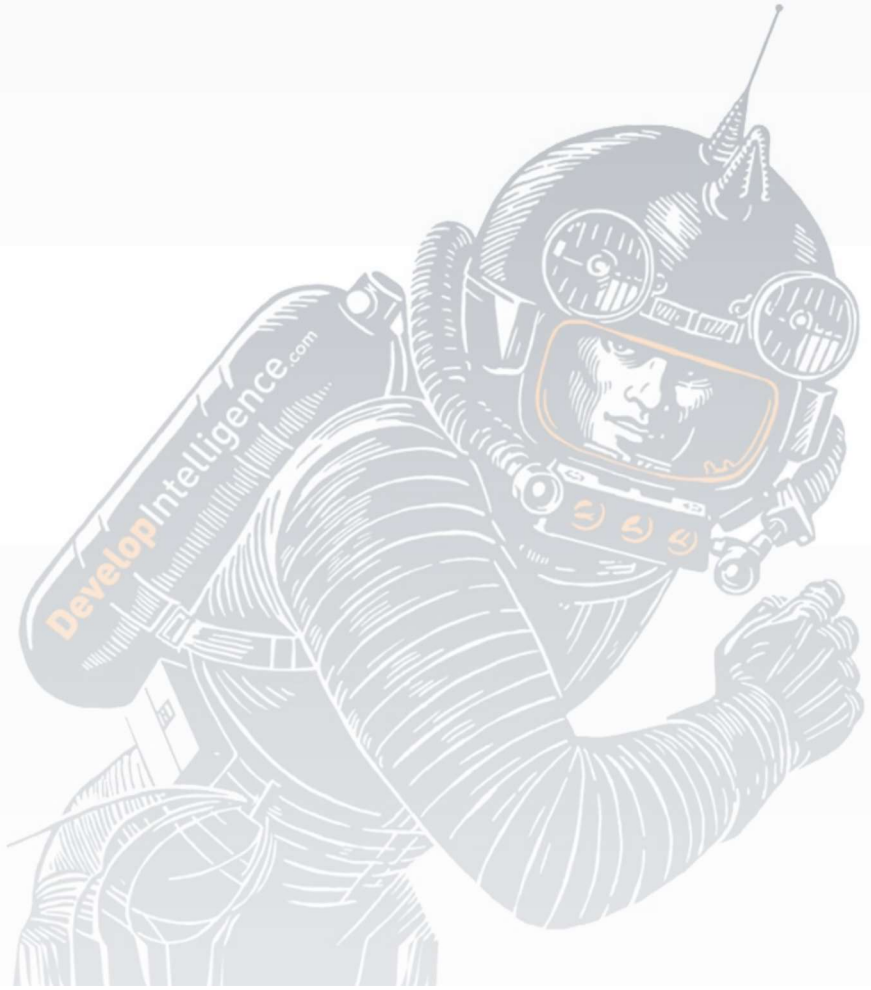

Introducing .NET Core

Complete Re-write? Really?

They did it by making the single worst strategic mistake that any software company can make: They decided to rewrite the code from scratch.

Microsoft Has Come a Long Way

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- Balmer days are long gone
- Windows isn't the cash cow it was
- Office sales have plateaued
- The Cloud Happened

.NET Classic: Showing its Age

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- Monolithic
- Slow release cycles
- Relies on legacy Windows technologies
  - ISAPI
  - COM
  - Windows Update
- Leading to
  - Performance ceilings
  - Not *really* cross-platform

Biggest Philosophical Difference

- Classic .NET is very much a **platform**
- .NET Core is more of an **API suite**
- Architect: David Fowler

Priority: Keep it Light

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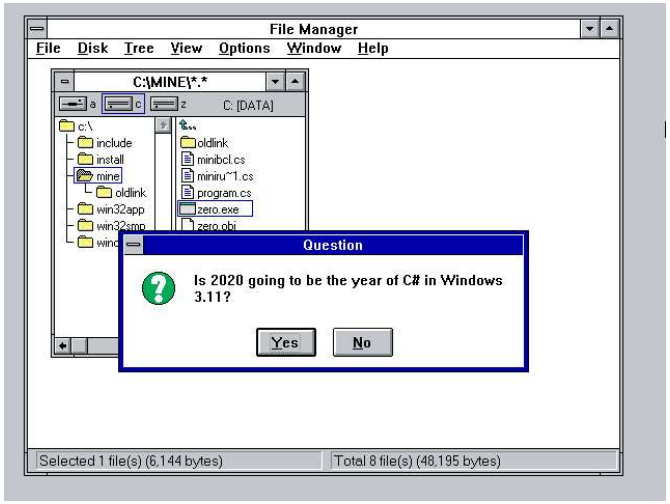
- Make everything a dependency
- Focus on microservices
- Support containers
- Enable side-by-side versions
  - No GAC
- Tree-shaking

How Light?

- Arcade game in 8k Binary
- Small enough to run on Windows 3.1



.NET Has Everything *(Almost)*

- Windows Forms
- WPF
- Universal Windows Platform
- COM Interop
- GPIO Support for Raspberry Pi

Supported Platforms

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- Windows
- Linux
- OS X
- Docker
- Azure

Minimum Architecture

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- CoreCLR
  - Came out of SilverLight
- CoreFX - .NET Core Base Class Library (BCL)

New Deployment Model

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- **Portable applications** require a runtime
- **Self-contained applications** include *everything*. No framework installation needed.

Why Choose **.NET Framework**

- Not many reasons
- Inertia:
  - You use third-party .NET libraries or NuGet packages not available for .NET Core
  - Porting is a hassle
- *You love WCF?*

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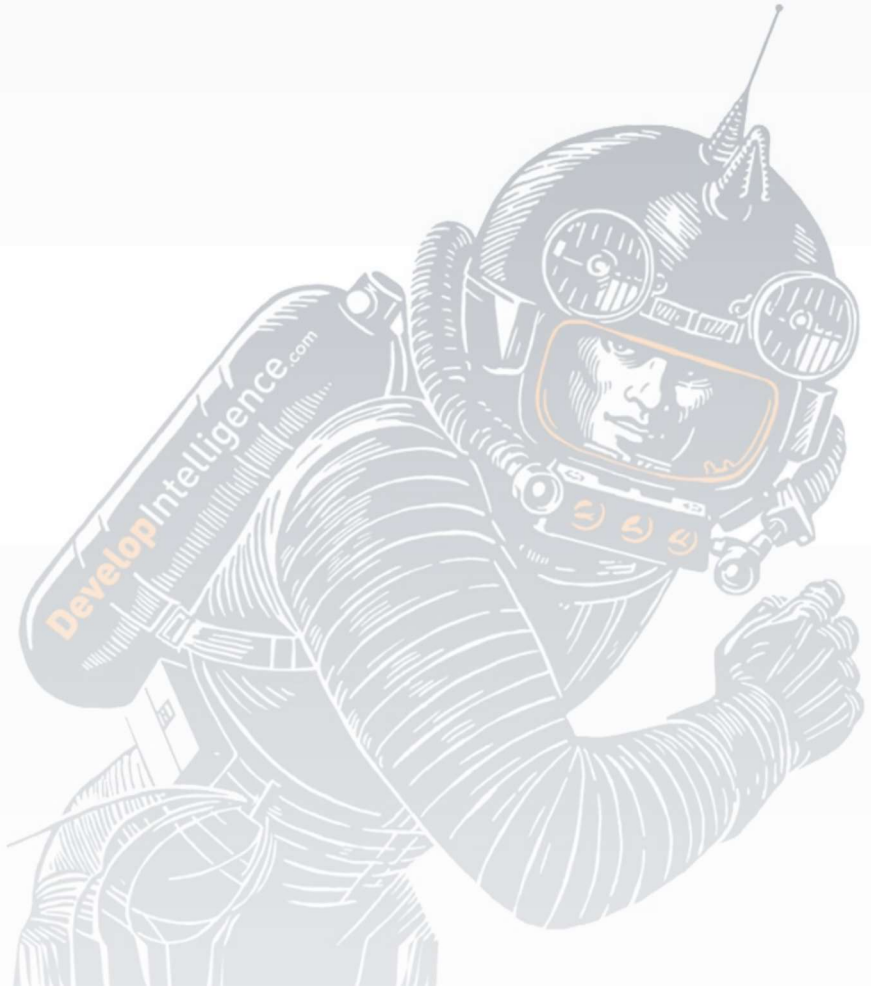

Tooling

About

- In the olden days, there was 1 option
- Now there's a bunch
  - VSCode
  - Visual Studio
  - Rider
- Paradox of choice

Core CLI

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- Similar to open source tools
  - npm
  - Angular CLI
- *But not as good*
- Good for fans of
  - vi
  - emacs
  - Linux
- *I'll try to use it as much as possible*

Core CLI Example

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Command-Line Hello World

```
1 > dotnet new console -o hello
2 > cd hello
3 > dotnet run
4 Hello World!
```

VS Code

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- Selling points
  - Open Source
  - Cross-platform
  - Lightweight
  - Extensible
- On the other hand
  - Needs configuration
  - Not quite as good

IDE Cadillac: Visual Studio

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- Not going away
- Full-fledged IDE
- Still the best
- Costs money (usually)
- Not for Ubuntu (yet)

Supported Web Servers

- Kestrel
- IIS
- HTTP.sys
- Nginx
- Apache
- Docker

Default Web Server: Kestrel

Develop Intelligence

- Cross-platform
- Open-source
- Fast

Resources

- Hanselman
- .NET Videos
- Book of the Runtime
- Github
- Sample applications
- Clean Code
- Microsoft Developer Blogs
  - Raymond Chen

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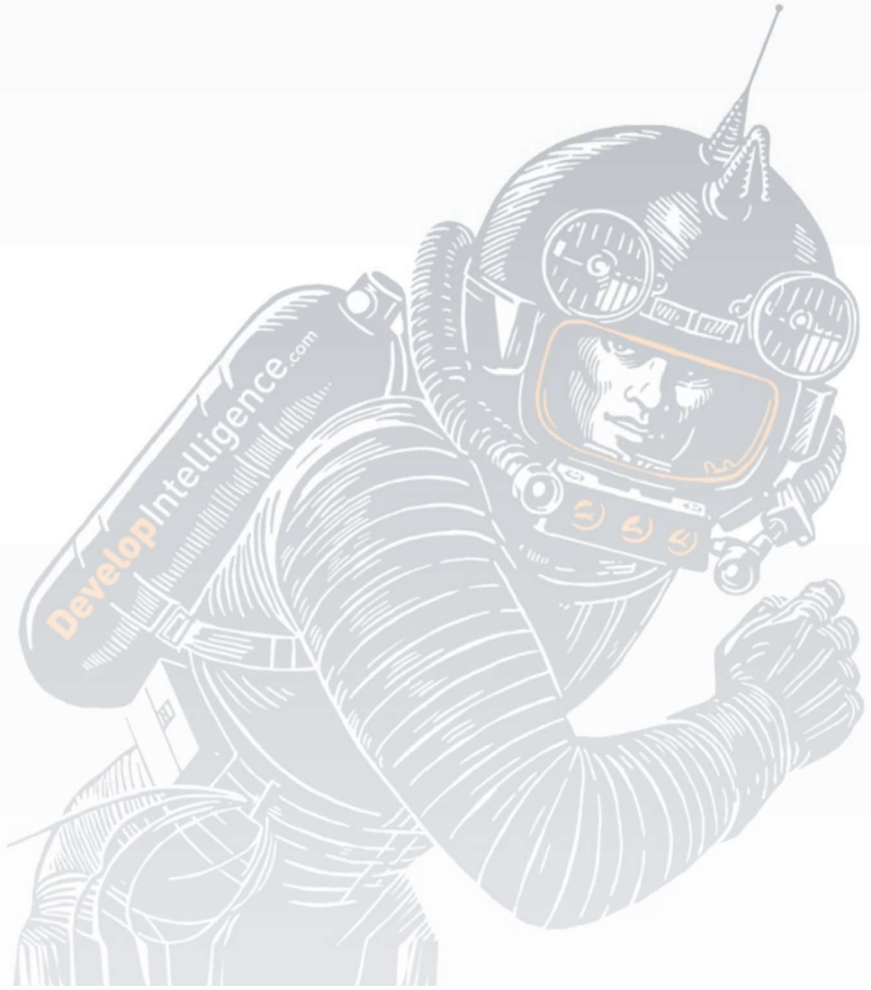

Review

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